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(PCT/IT2005/000114)
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Amendments under Art. 34 PCT

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Amended CLAIMS

1. A multi-ply web material (N), comprising at least three plies joined to one another by gluing, wherein:

– a first ply (V1) forming a first outer surface of said material has a first pattern composed of first decorative elements (E1) each formed of at least one protuberance (P1) projecting towards the inside of said material and obtained by embossing said first ply (V1), said first decorative elements having a density of no more than 3 elements/cm²;

– a second ply (V2) forming a second outer surface of said material (N) has a second pattern composed of second decorative elements (E2) each formed of at least one protuberance (P3) projecting towards the inside of said material and obtained by embossing said second ply (V2), with a density of no more than 3 elements/cm²;

– at least a third ply (V3) is interposed between said first ply (V1) and said second ply (V2);

– at least a first glue (C1) is applied in areas corresponding to at least some of the protuberances defining said first decorative elements (E1) of the first ply (V1);

– and the first and the second decorative elements are different from each other and are distributed randomly with respect to each other.

2. Material as claimed in claim 1, wherein said first glue (C1) is applied to the third ply (V3) in said areas.

3. Material as claimed in claim 2, wherein said first glue is made to seep at least partly through said third and said first ply and reciprocally glues said third ply (V3) to said first ply (V1) as well as said third ply (V3) to said second ply (V2).

4. Material as claimed in claim 1, wherein a second glue (C2) is applied to the second ply (V2) at the level of at least some of the protuberances defining said second decorative elements (E2).

5. Material as claimed in claim 4, wherein said first glue reciprocally glues the first and the third ply (V1, V3) and said second glue (C2) recip-

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roccally glues said third and said second ply (V3; V2).

6. Material as claimed in one or more of the previous claims, wherein said first ply (V1) has a background embossing (P2).

7. Material as claimed in claim 6, wherein the background embossing of said first ply is composed of protuberances (P2) with a geometrical form, of a height less than the protuberances (P1) forming said first decorative elements (E1).

8. Material as claimed in claim 6 or 7, wherein said background embossing of the first ply has a density equal to or greater than 8 protuberances/cm² and preferably equal to or greater than 15 protuberances/cm².

9. Material as claimed in one or more of the previous claims, wherein said second ply (V2) has a background embossing (P4).

10. Material as claimed in claim 9, wherein the background embossing of said second ply is composed of protuberances (P4) with a geometrical form, of a height less than the protuberances (P3) forming said second decorative elements (E2).

11. Material as claimed in claim 9 or 10, wherein said background embossing of the second ply has a density equal to or greater than 8 protuberances/cm² and preferably equal to or greater than 15 protuberances/cm².

12. Material as claimed in one or more claims 9 to 11, wherein said background embossing of the second ply (v2) is flattened at the level of the protuberances (P1) forming the first decorative elements (E1) on said first ply (V1).

13. Material as claimed in one or more of the previous claims, wherein at least some of the protuberances (P3) defining said second decorative elements (E2) are flattened at the level of the respective protuberances (P1) defining said first decorative elements (E1).

14. Material as claimed in one or more of the previous claims, wherein said third ply (V3) is devoid of embossing.

15. Material as claimed in one or more of the previous claims, wherein said third ply (V3) is colored.

16. Material as claimed in one or more of the previous claims, wherein said third ply (V3) has a printed pattern.

17. Material as claimed in one or more of the previous claims,

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wherein one or more of said first, second and third plies are composed of two or more layers (S1, S2).

18. Material as claimed in claim 17, wherein said two or more layers are joined to one another by ply-bonding.

5 19. Material as claimed in claim 17 or 18, wherein at least said third ply is composed of two or more layers.

20. Material as claimed in one or more of the previous claims, wherein said at least one third ply (V3) is glued to the second ply by lamination at the protuberances forming said second decorative elements (E2).

10 21. Material as claimed in one or more of the previous claims, wherein said first and second glue are chromatically different from each other.

22. Material as claimed in one or more of the previous claims, made up in a roll.

15 23. Material as claimed in claim 22, wherein at least the first pattern is composed of decorative elements (E1) symmetrical with respect to a straight line parallel to the axis of the roll (R).

24. Method for the production of a multi-ply web material comprising the phases of:

20 -embossing a first ply (V1) defining a first outer surface of said material forming thereon a first pattern composed of first decorative elements (E1) each formed by at least one protuberance projecting towards the inside of said material, said first elements having a density of no more than 3 elements/cm²;

25 -embossing a second ply (V2) defining a second outer surface of said material forming thereon a pattern composed of second decorative elements (E2) each formed by at least one protuberance projecting towards the inside of said material, said second elements having a density of no more than 3 elements/cm², the first and the second decorative elements differing from each other and being distributed randomly with respect to each other, said
30 first and said second decorative elements being distributed randomly with respect to each other;

-providing at least a third ply (V3) interposed between said first ply (V1) and said second ply (V2);

-applying at least a first glue (C1) in areas corresponding to at least

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some of the protuberances (P1) defining said first decorative elements (E1).

25. Method according to claim 24, wherein said first ply (V1) is embossed in a first embossing unit (3) to form thereon said first pattern and said second ply (V2) is embossed in a second embossing unit (23) to form said second pattern, the embossed second ply being fed from said second embossing unit (23) to said first embossing unit (3) to be joined to said first ply (V1).

26. Method as claimed in claim 24 or 25, wherein said first glue (C1) is applied to the first third ply (V3) at the level of at least some of the protuberances (P1) forming said first decorative elements.

27. Method as claimed in claim 26, wherein the first glue is made to seep at least partly between said third and said first ply to reciprocally glue said third ply (V3) to said first ply (V1) as well as said third ply (V3) to said second ply (V2).

28. Method as claimed in claim 24 or 25, wherein said first glue (C1) is applied to the first ply (V1) at the level of at least some of the protuberances (P1) forming said first decorative elements (E1).

29. Method as claimed in claim 24 or 25, wherein a second glue (C2) is applied to the second ply at the level of at least some of the protuberances (P3) defining said second decorative elements (E2).

30. Method as claimed in claim 28 and 29, wherein said first glue (C1) reciprocally glues the first and the third ply (V1, V3) and said second glue (C2) reciprocally glues said third and said second ply (V3; V2).

31. Method as claimed in one or more of claims 24 to 31, wherein said first ply (V1) is embossed between a first pressure roller (7) and a first embossing cylinder (5) having projections (5P) corresponding to the protuberances (P1) forming said first decorative elements (E1), and said second ply (V2) is joined to said first ply (V1) laminating said first ply (V1) and said second ply (V2) between the first embossing cylinder (5) and a first laminating roller (9), with said at least one third ply (V3) interposed between the first and the second ply.

32. Method as claimed in claim 31, wherein said first glue (C1) is applied to at least some of the protuberances (P1) produced on said first ply (V1) when it is engaged with the first embossing cylinder (5) and wherein said

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second and third ply (V2, V3), previously glued to each other at the level of at least some of the second decorative elements (E2), are placed on the first ply (V1) and laminated therewith between the first embossing cylinder (5) and the first laminating roller (9) after application of the first glue (C1).

5 33. Method as claimed in one or more of claims 24 to 32, wherein said first ply is previously embossed with a background pattern (P2).

34. Method as claimed in claim 33, wherein said background pattern is flattened at the level of said first decorative elements.

35. Method as claimed in one or more of claims 24 to 34, wherein
10 said second ply (V2) is embossed between a second pressure roller (27) and a second embossing cylinder (25) with projections (25P) corresponding to the protuberances (P3) forming said second decorative elements (E2), and said second ply (V2) is joined to said third ply (V3) laminating said second ply (V2) and said third ply (V3) between the second embossing cylinder (25) and a
15 second laminating roller (29), said second embossing cylinder and said second laminating roller being disposed upstream of the first embossing cylinder and of the first laminating roller.

36. Method as claimed in claim 35, wherein said second glue (C2) is applied to the protuberances (P3) produced on said second ply (V2) when it is
20 engaged with the second embossing cylinder (25), said third ply (V3) being placed on the second ply (V2) after application of the second glue (C2) and laminated with the second ply (V2) between the second embossing cylinder (25) and the second laminating roller (29).

37. Method as claimed in claim 35 or 36, wherein said second ply is
25 previously embossed with a background pattern (P4).

38. Method as claimed in claim 37, wherein said background pattern (P4) on the second ply (V2) is flattened at the level of said second decorative elements (E2) when the second ply (V2) is embossed with said second decorative elements (E2).

39. Method as claimed at least in claim 33, wherein the background embossing (P2) of said first ply (V1) is composed of protuberances (P2) with a geometrical form, of a height less than the protuberances (P1) forming said second decorative elements (E2).

40. Method as claimed in claim 33 or 39, wherein said background

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embossing (P2) of the first ply (V1) has a density equal to or greater than 8 protuberances/cm² and preferably equal to or greater than 15 protuberances/cm².

41. Method as claimed in claim 37 or 38, wherein the background embossing of said second ply is composed of protuberances with a geometrical form, of a height less than the protuberances forming said second decorative elements.

42. Method as claimed in claim 41, wherein said background embossing of the first ply (V1) has a density equal to or greater than 8 protuberances/cm² and preferably equal to or greater than 15 protuberances/cm².

43. Method as claimed in claim 41 or 42, wherein said background embossing (P4) of the second ply (V2) is flattened at the level of the protuberances (P1) forming the first decorative elements (E1) on said first ply (V1) when the first ply (V1), the second ply (V2) and the third ply (V3) are joined to one another.

44. Method as claimed in one or more of claims 24 to 43, wherein said third ply (V3) is devoid of embossing.

45. Method as claimed in one or more of claims 24 to 44, wherein said third ply (V3) is printed.

46. Method as claimed in one or more of claims 24 to 45, wherein one or more of said first, second and third plies are formed of two or more layers.

47. Method as claimed in claim 46, wherein said two or more layers are joined to one another by ply-bonding.

48. Method as claimed in claim 46 or 47, wherein at least said third ply is composed of two or more layers.

49. Method as claimed in one or more of claims 24 to 48, wherein said first and second glue are chromatically different from each other.

50. Method as claimed in one or more of claims 24 to 49, wherein said material is made up in a roll (R).

51. Method as claimed in claim 50, wherein at least the first pattern (E1) is composed of designs symmetrical with respect to a straight line parallel to the axis of the roll.

52. Method as claimed in one or more of claims 24 to 51, wherein

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said third ply is colored.

53. Method as claimed in one or more of claims 24 to 52, wherein said protuberances (P3) forming the second decorative elements (E2) on the second ply (V2) are at least partly flattened at the level of the protuberances (P1) forming the first decorative elements (E1).

54. Device for the production of embossed multi-ply web material, comprising:

– a first embossing-laminating unit (3) comprising a first embossing cylinder (5) equipped with first projections (5P) defining a first pattern for generating first decorative elements on a first ply (V1), a first pressure roller (7) cooperating with said first embossing cylinder (5), a first laminating roller (9) and a first glue dispenser (11) disposed between said first pressure roller (7) and said first laminating roller (9);

– an embossing unit comprising at least a second embossing cylinder (25) equipped with second projections (25P) defining a second pattern for generating second decorative elements (E2) on a second ply (V2), and a second pressure roller (27) cooperating with said second embossing cylinder (25);

– a first path (P1) for at least a first ply (V1) towards and through said first embossing-laminating unit (3);

– a second path (P2) for at least a second ply (V2) towards and through said second embossing unit (23);

– a third path (P3) for said third ply (V3);

– said first and second embossing units and said first and second path for said first and second ply are arranged such that said first and said second decorative elements are distributed randomly with respect to each other on said first and second ply.

55. Device as claimed in claim 54, wherein said embossing unit is a second embossing-laminating unit (23) and comprises: a second laminating roller (29) cooperating with said second embossing cylinder; and a second glue dispenser (31) disposed between said second pressure roller and said second laminating roller.

56. Device as claimed in claim 55, wherein said third path for the third ply extends towards and through said second embossing-laminating unit

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(23).

57. Device as claimed in claim 54, 55, 56, comprising along said first path (P1) a first secondary embossing unit (13) to produce a background embossing (P2) on said first ply (V1).

5 58. Device as claimed in one or more of claims 54 to 57, comprising along said second path (P2) a second secondary embossing unit (33) to produce a background embossing (P4) on said second ply (V2).

59. Device as claimed in one or more of claims 54 to 57, comprising a printing unit (41).

10 60. Device as claimed in claim 59, wherein said printing unit (41) is positioned along said third path (P3).

61. Device as claimed in one or more of claims 54 to 60, comprising a ply-bonding unit (51).

15 62. Device as claimed in claim 61, wherein said ply-bonding unit is disposed along said third path (P3).

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